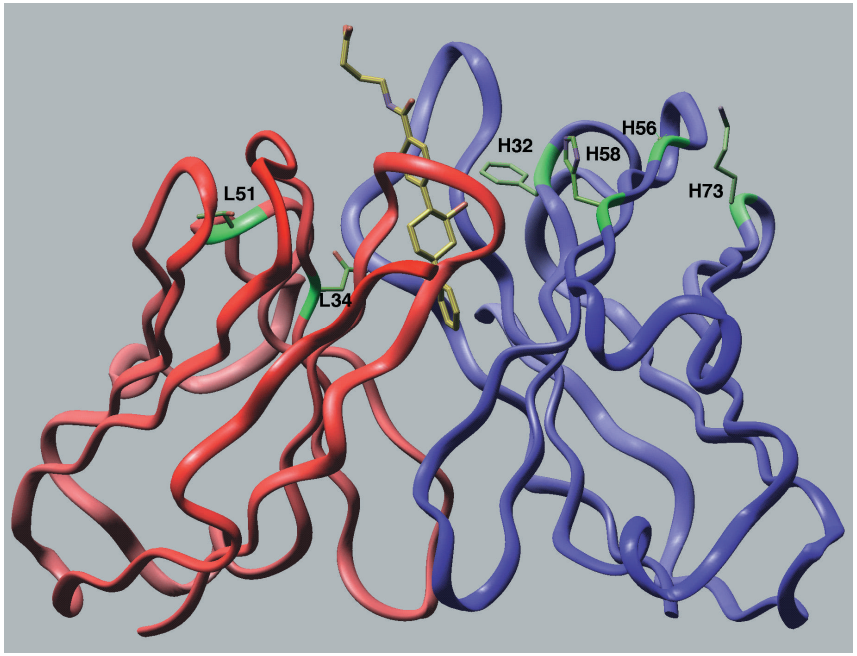
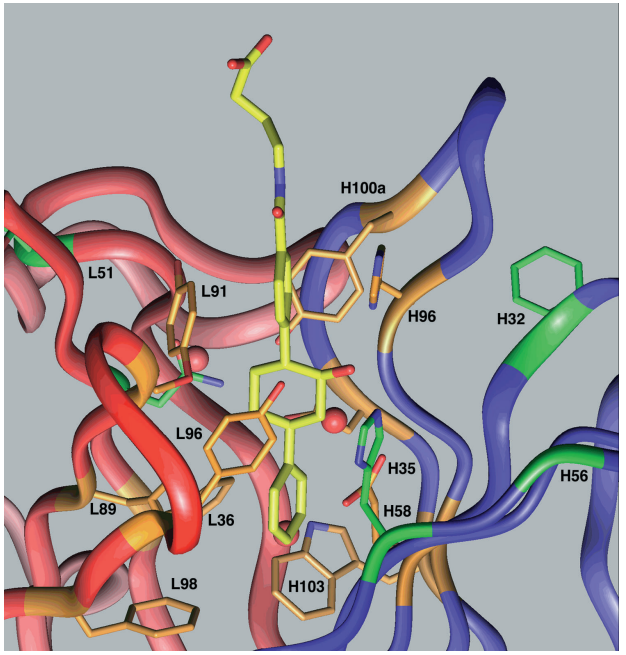
Secrets of Immune System Revealed at Advanced Light Source

Synchrotron Studies Reveal Details of Catalytic Antibody Maturation



Germline Catalytic Antibody

Three dimensional structure of the immature "germline" antibody (blue and red strands) that binds the analog (yellow) of the reacting molecule substrate. This analog was used as an antigen to select that antibody from the 10^{10} that preexist in the mouse. Amino acids that mutate during the maturation process are shown in green.



Mature Catalytic Antibody

Enlarged view of the binding site. Amino acids that bind the substrate are in yellow. The mutations result in an altered binding pocket that binds the substrate more tightly, but so tightly that it has reduced catalytic activity. Control of maturation would therefore lead to increased catalytic rates.

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